

# Trapped between barriers OR Flowing despite barriers?

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## Preface

Sustainability topics need formats that go beyond and complement traditional science articles and lectures: formats that address a non-academic audience and are able to reach younger target groups as well as formats that help stakeholders to communicate their concerns. Ideally, these formats can help create a deeper understanding and greater motivation in society for a better relationship between humankind and the environment.

Science comics are one such format. They combine image and text in an entertaining way. They allow facts and emotions to coexist. Above all, they offer a stage for all the heroes of everyday life, from whose perspective climate change and environmental protection can be illustrated. Last but not least, comics are able to show how scientists work and that research can be a lot of fun.

This science comic was created in cooperation between a young scientist and a comic artist. The data came from the doctoral project of the environmental scientist, the pictures from the pen of the artist. All ideas were developed jointly. During the work in tandem, which lasted several months, the talents and abilities of the two complemented each other wonderfully and everyone learned from the other. The result is a six-page comic that tells of the complex difficulties involved in implementing the European Water Framework Directive locally.

Nadine Schröder and Nikhil Chaudhary deserve our huge thanks for their joint work!

Anne Dombrowski, Science Communicator at IRI THESys  
Berlin, December 2019



# Trapped between barriers OR Flowing despite barriers?

Nadine Jenny Shrin Schröder & Nikhil Chaudhary

## Abstract

The EU Water Framework Directive (WFD) is said to be a directive of a new generation as it is very flexible to avoid institutional misfits during implementation. Nevertheless, 20 years after putting the WFD into force the ambitious aims, the good (ecological and chemical) status in all European Waters, are far from being reached by the member states.

There may be several ecological reasons why a time horizon of 15 to 27 years is too tight to undo 500 years of anthropogenic influence. However, in some places implementation has not even started yet, has been delayed or the measures taken are insufficient to achieve WFD goals. Reasons for this may be found in national and local governance structures and processes.

This comic aims to visualize barriers for WFD implementation at the local level in Germany. WFD implementers were asked how they are implementing WFD measures and which barriers they face or which conflicts they perceive. The German federal states are characterized by different constellations of decision-making centers in WFD-related water management: including water authorities, water management authorities, water course maintenance associations and enterprises, water and soil associations, nature conservation authorities, nature conservation associations, companies and other state and non-state actors. The states vary in their institutional settings, levels involved in decision-making and the kinds of ecological-administrative boundaries they face. Nevertheless, local WFD implementers share certain types of barriers, although details vary. These barrier types are motivation, financial and personnel resources, land resources and institutional interplay. The results reflect not so much the single case which was used to illustrate the barriers but rather the sum of all analyzed local actors implementing WFD measures. These face different barriers to varying extents. The states address some of these barriers through a variety of strategies.

Data for the analysis was gathered in 66 semi-structured interviews with authorities from all levels and non-state actors in six federal states — Hesse, Lower Saxony, Saxony, Saxony-Anhalt, Thuringia and North Rhine Westphalia — as well as through the analysis of policy documents and official websites.

**Keywords:** EU Water Framework Directive, WFD, policy implementation, implementation barriers, implementation strategies, Germany, Saxony-Anhalt, Comic



A water maintenance association somewhere in Saxony-Anhalt...

BUZZZ!



Yes, this is Andreas\* speaking. Sure, I got your email. You research the WFD implementation in Germany? An interesting topic! Fire away with your questions!

Saxony-Anhalt has 28 water maintenance associations which should voluntarily take measures to support the achievement of WFD goals. However, WFD implementation is progressing only slowly in the whole of Germany.

Is there a typical way how your WFD measures come into being? What problems do you face?

In my PhD, I analyse which barriers are hindering the local implementation of hydromorphology and connectivity measures — one piece in the puzzle for good water status.

By now, I have conducted 66 interviews in six federal states of Germany. The situation in Saxony-Anhalt illustrates nicely barriers I found in many of my cases, ...

## EU WATER FRAMEWORK DIRECTIVE (WFD)

All European waters need to achieve good ecological/chemical status by 2027 at the latest. Exemptions are possible.

Measures comprise e.g. reducing nutrients & toxic substances and improving hydromorphology and connectivity through re-creating natural habitats and dismantling artificial barriers.

The Member States assign competent authorities and design implementation processes considering principles of public participation, sector integration and basin management.

... barriers in the governance system which need to be addressed in order to progress with removing the physical barriers for good water status.

\*Name changed



Andreas tells me what demotivates actors like him to take WFD measures - such as fears of residents and the decision-makers themselves, ...

It is not easy to convince the members of the associations and many associations' heads also fear conflicts with fulfilling their primary tasks.

... fears of increased water-logging...

... fears of increased flooding...

... but some find synergies with their primary tasks...

CAUTION!  
WEIR REMOVAL  
IN PROGRESS!

... "we should have removed it anyway"...

I think it is good if money flows into my region... better than somebody else does it, 1000 km away.

... "sludge removal improves the flowing conditions"...

BARRIER 1:  
MOTIVATION

... "we help the fish with steps"...

... "WFD measures enhance recreation areas"...

... and some are motivated intrinsically by doing something good for the environment or their region, or by synergies with flood protection or recreation and tourism.



Resources are an important factor for implementation decisions. Saxony-Anhalt is the only state I studied offering 100% funding, but even here financial and personnel barriers pop up.

I was taken to court for planning WFD measures during my working time paid by our members.

... WFD measures add to the given work-load ...

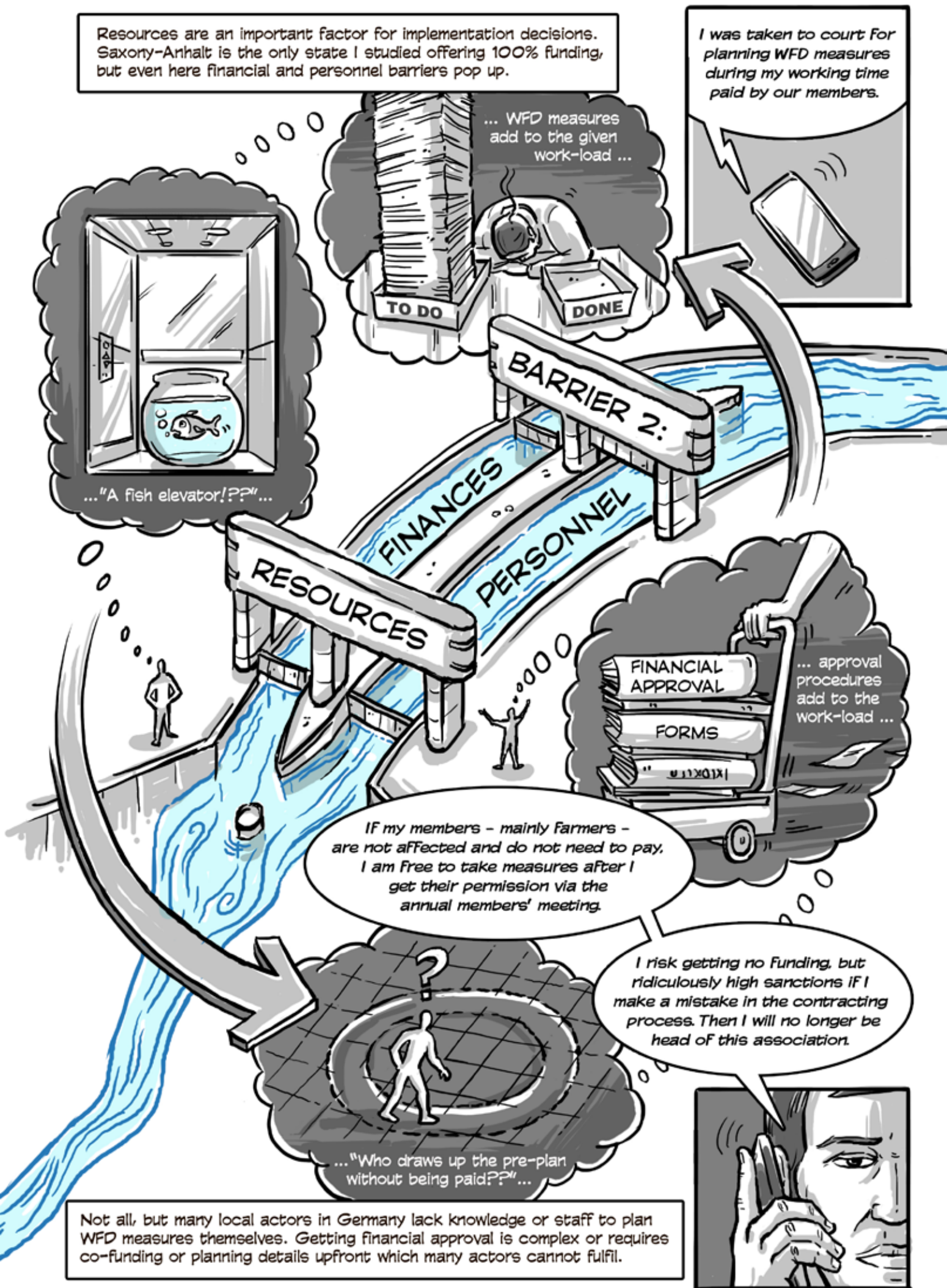
... "A fish elevator!??!" ...

If my members - mainly farmers - are not affected and do not need to pay, I am free to take measures after I get their permission via the annual members' meeting.

I risk getting no funding, but ridiculously high sanctions if I make a mistake in the contracting process. Then I will no longer be head of this association.

... "Who draws up the pre-plan without being paid??" ...

Not all, but many local actors in Germany lack knowledge or staff to plan WFD measures themselves. Getting financial approval is complex or requires co-funding or planning details upfront which many actors cannot fulfil.





WFD measures require land. Plenty of eligible usage interests already exist. Some usage conflicts can only be solved politically. Most of the uses need land — land needed to be bought, leased, transformed or at least swapped to free land along watercourses. ...

Construction at nature conservation site?

Forestry without trees?

Agriculture without soil?

Hydro-power without dams?

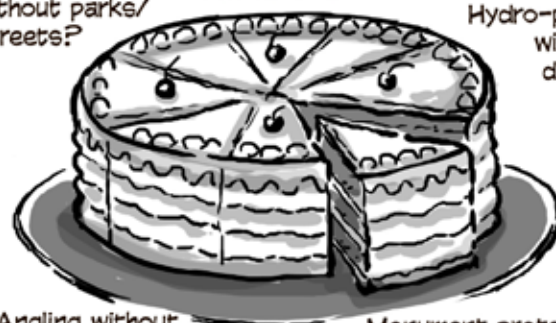
Communities without parks/streets?

Angling without access to watercourses?

Monument protection without water mills?

I prefer building a park or a street instead of river renaturation!

Yes, Mr. Mayor, something visible is definitely better for your re-election!



MONUMENT PROTECTION

INDUSTRY

FLOOD PROTECTION

TOURISM

COMMUNITY

FORESTRY

**BARRIER 3:  
LAND RESOURCES**

WATER PROVISION

WASTE-WATER TREATMENT

NATURE CONSERVATION

!?!  
The market price is too high and quite honestly farmers don't want to sell their land. The farmer is growing wheat and rapeseed there. He can not allow his agricultural land to be reduced — undermining his livelihood.

Even if we need the land only temporarily for construction it is difficult. Therefore, we mostly go for measures not requiring land.

WFD IMPLEMENTER

... Even swapping land is a long and complex procedure. The land 'cake' in Germany is already divided up. WFD implementers would need to invent a new piece of this cake. This restricts the choice of measures as well as the motivation to implement.

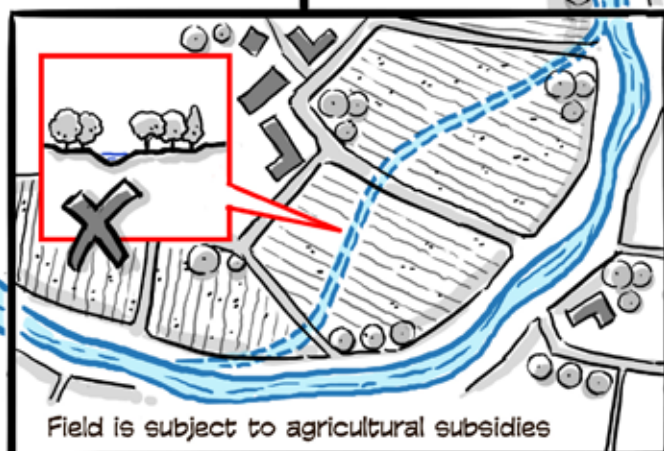
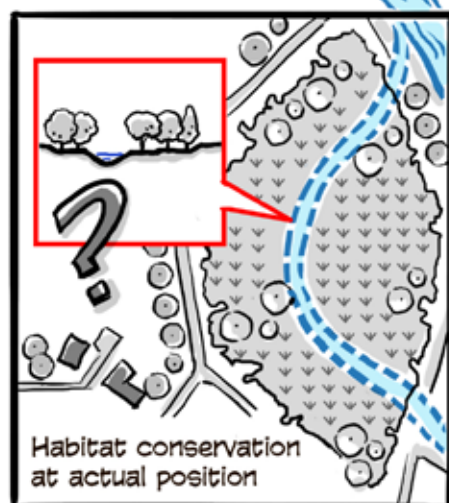




Some conflicts are the result of prescriptions in laws — fixed interests, goals or procedures — what makes the redistribution of the cake even more difficult. Also if the actors themselves were more willing to compromise. ...

*My association was already active before my time and principally I think the WFD is a good thing. However, I can understand my colleagues not being motivated to take WFD measures. Maybe I will give up as well.*

## BARRIER 4: REGULATION



### Nature Conservation Law

Protect specific species and their habitats

Construction works forbidden during breeding times

Compensate interventions in nature

WFD measures may count as interventions

WFD measures may or may not count as compensation

### Agricultural Policy

Area-based subsidies

*Area-based subsidies are so high that farmers are not interested in selling land even when it has no high value for their cultivation activities. This way, EU agricultural policy hampers land provision additionally.*

### Renewable Energy Law

... Solutions here require political decisions and political influence by local actors — which aim gets priority here? Decisions taken might not be in favour of the WFD.



In Germany, the numbers on goal achievement and on non-implementation of measures tell us that something needs to be changed to achieve the WFD goals.

Like in a large policy experiment, German states undertake more or less continuously incremental changes for process improvements, local actors take isolated steps, but does all this suffice?

## SOLUTIONS?

- Water Alliances

→ MOTIVATION  
→ PERSONNEL

### REGULATION

- Established approval procedures
- Joint planning
- Defining measures very small
- Conflict avoidance

- 100% FUNDING

Water advisors:  
• District govt.  
• Municipal advisory agency

→ MOTIVATION

Water Advisors:  
• Funding bank  
• New maintenance associations

→ MOTIVATION

### PERSONNEL & MOTIVATION

- Move task to larger unit:
  - To county
  - To special purpose association
- Contract out:
  - To Landscape planning association
- Spread motivation:
  - county → water and soil associations (Cover co-funding with compensation money + advice)

### LAND & FINANCIAL RESOURCES

- Mixed strategies
- Avoid requiring land
- Use land when available
- Land swapping
- Use compensation instruments for (co-) funding & land obtainment
- Buy land ahead of planning
- Co-funding by foundations, communities, counties ...

... With approaches like these we may swim all the way back from here coping more or less with each barrier. Finally, the motivation barrier seems to be unbreachable from the outside. Should we re-think who we expect to implement WFD measures? And what can WFD actors learn from each other about meaningful strategies?

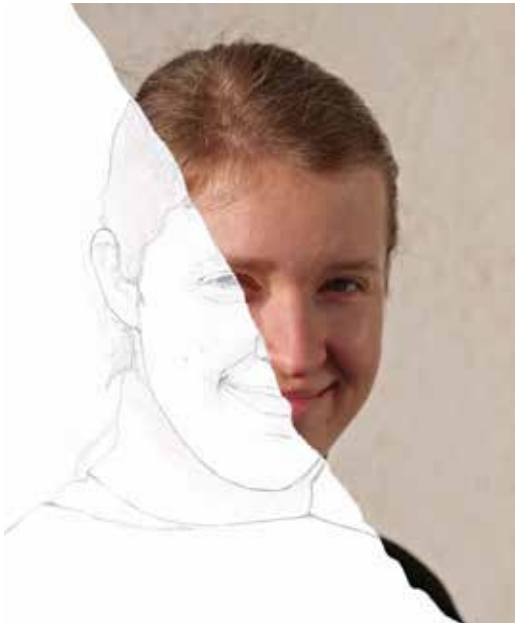
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## Acknowledgements

We would like to thank all interviewees for their openness and the numerous hours of their limited time spent answering questions. We also thank Timothy Moss for commenting on the draft. We are grateful to the IRI THESys for funding and supporting this project of alternative science communication, especially to Anne Dombrowski and Kathrin Klementz.



# About



"I enjoyed the ping-pong in developing visualization ideas with Nikhil. It taught me that science communication may start already while developing a publication through explaining the topic to the artist. Even the draft of the final comic may already be a door-opener for the communication with practitioners as it is much easier to be grasped."

## The scientist

Nadine studied Integrated Natural Resource Management M.Sc. at Humboldt-Universität zu Berlin and Environmental Engineering M.Sc. at Technical University of Berlin in parallel. She is interested in water and soil issues seen from different perspectives and broadening these through interdisciplinary work.

In her PhD she investigates how polycentric governance structures influence the local implementation of the EU Water Framework Directive in Germany: how river basin management is realized, how sector integration functions, how the public participates in implementation processes and which barriers local actors face in implementing this directive.



"Nadine's research taught me how environmental policies and on-the-ground decision-making operate in the German regional context. This co-creation effort made me realise how the medium of comics lends itself well to presenting such a complex and multi-dimensional topic — through its simultaneous interplay of ideas, text, composition, visual motifs and graphic expressions. The resultant storytelling was an absolutely pleasurable process!"

## The artist

Nikhil Chaudhary is an architect and urban-planner, and recently finished his Master in Public Policy from the Hertie School of Governance at Berlin. He was previously a Senior Associate with the World Resources Institute, where he was engaged in sustainable urban development initiatives for municipalities across Asia. His side-project to impactfully communicate urban issues for a non-technical audience by creating comics was subsequently expanded into an art-practice across India and Europe. His stories have so far been published in diverse print and online media in 6 countries.

Nikhil currently works as an Advisor (Urban Transformation) for the European Institute of Innovation & Technology's (EIT) Climate Knowledge & Innovation Community (Climate-KIC).

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## Joining minds for sustainable pathways

At IRI THESys, the Integrative Research Institute on Transformations of Human-Environment Systems, scientists from humanities, social and natural sciences collaborate to solve interdisciplinary research questions related to the societal challenges of transforming human-environment systems.

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